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10/603,700	06/25/2003	Richard J. Moore	BEA920030012US1	3413

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EXAMINER	
STEELMAN, MARY J	
ART UNIT	**PAPER NUMBER**
2191	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/603,700	MOORE ET AL.	
	Examiner	Art Unit	
	MARY STEELMAN	2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 17-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 17-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to claims, amendments, and remarks received 02/26/2007. Per Applicant's request, claim 16 has been cancelled. Claims 8, 14, 15, and 18-20 have been amended. Claims 1-15 and 17-20 are pending.

Claim Rejections - 35 USC § 112

2. In view of the amendments to the claims, the prior second paragraph of 35 U.S.C. 112 rejections are hereby withdrawn.

Claim Rejections - 35 USC § 101

3. In view of the amendments to claims 14, 18, and 20, the prior 35 U.S.C. 101 rejections are hereby withdrawn.

Response to Arguments

4. Applicant has argued, in substance, the following:

As noted at the bottom of page 7, "Applicant submits that the monitoring libraries, of DLL's , of Morshed (i.e. the probe program of Morshed) are not particularly described in Morshed as being (1) executable via an interpreter; and (2) independent of the architecture of the processors, as to which the claimed invention is limited..."

Examiner's Response:

Claim limitations recite, "a probe program associated with each breakpoint that is executable by the one or more processors via an interpreter, independent of an architecture of the one or more processors, and generated from source code written in a high level language..."

Examiner maintains that Morshed's DLL library provides a probe program. The probe program is executable. This is done 'via an interpreter'. The interpreter is 'independent of an architecture of the one or more processors'. The probe program is written in a high level language. See col. 19: 30 through col. 23: 20 and related FIGs. 3, 12, 13, and 14. Col. 19: 30, "Described below are method of automatically editing the executable byte code representation of a computer program or other methods for generating instrumented byte code. In one embodiment the byte code is altered by the addition of new instructions and / or deletion or modification of existing instructions." Col. 20: 12-21, "There are many different ways to instrument byte code. In one embodiment, the editing is performed automatically as a separate post-compile process before the byte code is executed. In another embodiment, the editing is performed automatically by the run time environment itself, which as been modified to alter the code before it is executed. In a third embodiment, the final state of the compiler shown in FIG. 3 generates instrumented byte code from the instrumented IR data 65 rather than generating the object code 46, as described above. Col. 20: 60 – col. 21: 6, "Byte code may be instrumented by instrumenting each class as the class is loaded by the VM runtime system...the class instance is provided to an **instrumentation DLL 410** (emphasis added) which instruments the byte code of the class instance 406 to provide an instrumented class instance 412. The instrumented class instance 412 is provided as an input to the VM runtime module 404 instead of the class instance 406. That is, the VM runtime module 404 uses the instrumented class instance 412 instead of the class instance 406. The mechanism for providing the instrumented class instance 412 to the VM runtime module 404 is described in more detail hereinafter. The instrumented class instance 412 contains native calls to a monitoring DLL 414..." Examiner maintains the rejection of claims.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-15 and 16-20 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6,760,903 B1 to Morshed et al.

Per claim 1:

A system comprising:

-one or more processors;

See FIG. 1, #22 processor and col. 5:61- target processor.

-a base program executable by the one or more processors and having one or more breakpoints;

See FIG. 56, test.exe (base program), breakpoints used in monitor process disclosed at col. 64, line 45.

-a probe program associated with each breakpoint that is executable by the one or more processors via an interpreter (col. 41: 43), independent (col. 19:40) of an architecture of the one or more processors, and generated from source code written in a high-level language, the probe program associated with each breakpoint being executed when the breakpoint is reached during execution of the base program.

See col. 19: 22-29-"During execution...debugging routines...", col. 34: 6-13-"Processes, and

threads that may execute...may be instrumented...to include hooks or points (breakpoints) to allow for execution information to be gathered..." col. 34: 21-23-"The library (probe program associated with each breakpoint) may include code that is invoked to gather various types of performance information"

Per claim 2:

-the interpreter to interpret the probe program associated with each breakpoint.

Col. 19: 43-45, virtual machine , bytecode interpreter.

Per claim 3:

-the base program has a first address space and the probe program associated with each breakpoint has a second address space different from the first address space.

See FIG. 31. Col. 34: 31 As an example, the client process includes several libraries and communicates with other collectors on other client and server systems through connection...(stored in different address spaces)

Per claim 4:

-one or more probe expressions that address objects of the base program in the first address space and that are used by objects of the probe program in the second address space to communicate with the objects of the base program in the first address space.

As an example see, col. 34: 64-col. 35:8 Control is passed to the monitor DLL (probe program) when an outgoing request or a remote procedure call is made (probe expressions). In other

words, a first event that is registered on the client is to have the monitor DLL signaled just prior to an outgoing call resulting in control being passed to a location in the monitor DLL.

(Communications between objects of the base program and the probe program)

Per claim 5:

-a high-level language compiler to compile the probe program from source code written in the high-level language to object code.

See FIG. 3, compiler, #42, transforms source code.

Per claim 6:

-the high-level language compiler is able to seamlessly intermix variables of the base program in the first address space and variables of the probe program in the second address space.

Col. 12:12-44-compiler determines 'nodes of interest', operation that causes variables to become defined / undefined, and add runtime instrumentation routines.

Per claim 7:

-the probe program associated with each breakpoint is generated from an abstract syntax tree (AST) used to switch between the first and the second address spaces.

Col. 6: 58- col. 7: 4 The 4th state of the compiler, converts IR (intermediate representation) data from the IR data element into the object code. The IR data element is provided to the code instrumentation 50 which...instruments the IR data element 64 to provide a instrumented IR data element 65.

Per claim 8:

-the AST has a plurality of nodes.

Col. 6: 33-47 The 1st stage of the compiler converts the source code into tokens stored in a token stream data element 62. The token stream data element 62 contains symbols… The compiler 42 converts the tokens from the token stream data element 62 into data stored in a parse tree (AST) data element 63…interconnected…according to entry and exit points (complex first address space specific objects of the base program)…

Per claim 9:

-the AST is able to be serialized into an interim format and deserialized from the interim format to reconstruct the AST.

Col. 6:48-67-serialized into IR data element 64, and deserialized into object code, 46.

Per claim 10:

-probe program associated with each breakpoint is able to pass user messages by manipulating a state of one of the probe program and base program.

Col. 19: 59-'dynamic analysis' Col. 21: 5-17-Analyzers/viewers used to view the results of the instrumentation. Col. 28: 37-messsage header is added to a buffer that contains data transmitted via the message stream. The information that is passed from the monitoring DLL to the analyzer/viewers 416… Col. 32: 1-11-"Note that the data that is passed via the message stream

may be viewed and/or additionally processed in any one of a variety of conventional fashions, including using an appropriate graphical user interface..."

Per claim 11:

-probe program associated with each breakpoint is able to pass user messages by manipulating a stack of one of the probe program and base program.

Col. 10: 65-67, col. 23: 54-57-parameters that are passed during instrumentation are passed....using the stack, col. 32: 14-21-Classes and methods may be registered and messaged during events, col. 34: 25-30- 'stack'

Per claim 12:

-the base program is written in a high-level language different than the high-level language in which the probe program associated with each breakpoint is written.

Col. 22:2-3-JAVA, C++, different high level languages.

Per claim 13:

-the base program is written in a high-level language that is identical to the high-level language in which the probe program associated with each breakpoint is written.

Col. 7: 64-col. 8:5-could generate IR data that is identical to programmatically equivalent source language statement in a second source language...a particular set of IR data can be converted by a compiler into many different object codes... A base program may be written in an identical language to the probe program.

Per claim 14:

A method for constructing and using a probe program associated with a breakpoint of a base program comprising:

Col. 34: 6-13 Processes, and threads that may execute within the context of a single process...may be instrumented...to include hooks or points...

-constructing an abstract syntax tree (AST) having a plurality of nodes;

-representing objects of the base program with at least some of the nodes of the AST;

-representing objects of the probe program with other of the nodes of the AST;

-switching between a first address space of the objects of the base program and a second address space of the objects of the probe program by traversing the AST.

-serializing the AST into an interim format and storing the AST as serialized into the interim format,

-such that the probe program is executable via an interpreter, and is independent of an architecture of one or more processors executing the base program.

See rejection of limitations as addressed in claims 1 & 9 above.

Per claim 15:

-comprising: deserializing the AST from the interim format to reconstruct the AST.

See rejection of limitations as addressed in claim 9 above.

Per claim 17:

-manipulating a stack of the base program to pass user messages.

See rejection of limitations as addressed in claim 11 above.

Per claim 18:

An article of manufacture comprising:

-a machine-readable medium;

-means in the medium for probing a base program at a breakpoint thereof in a processor architecture-independent manner, an abstract syntax tree (AST) constructed by the probe program, serialized into an interim format, and stored.

See FIG. 2, and col. 5: 42-47-storage. See rejection of limitations addressed in claims 1 & 9 above.

Per claim 19:

-the means is written in a high-level language, and employs the AST.

See rejection of limitations addressed in claim 1 above.

Per claim 20:

-the medium is a recordable data storage medium.

Col. 883: 58-col. 86: 60-recordable data storage medium.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Steelman, whose telephone number is (571) 272-3704. The examiner can normally be reached Monday through Thursday, from 7:00 AM to 5:30 PM If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Zhen can be reached at (571) 272-3708. The fax phone number for the organization where this application or proceeding is assigned: 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mary Steelman

05/15/2007